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Fatal occupational injuries to older workers

Using data from the Census of Fatal Occupational Injuries program of the U.S. Bureau of Labor Statistics, this article examines the fatal injury experience of older workers during the 1992–2017 period. The analysis finds that older worker fatalities reached a series high in 2017, and that, compared with workers overall, older workers were more likely to be fatally injured on the job.

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The number of American workers age 55 and over (hereafter referred to as older workers) more than doubled from 1992 to 2017.[1] This increase is due both to a rising U.S. population of people age 55 and over and to a higher labor force participation rate for that population.[2]

Since 1992, the U.S. Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) program has published detailed national data on fatal workplace injuries.[3] While workers overall saw their fatal occupational injuries decline by 17 percent from 1992 to 2017, older workers incurred 56 percent more fatal work injuries in 2017 than in 1992. This trend is especially pronounced for workers in the oldest group, those age 65 and over. This group experienced 775 fatal occupational injuries in 2017, the highest number ever recorded in the CFOI, representing an increase of 87 fatal injuries since 2016 (the previous series high) and a 66-percent increase since 1992.

In addition to seeing an increasing number of fatal injuries, older workers were more likely than workers in general to be fatally injured on the job. In 2017, the fatal injury rate for workers age 65 and over was 10.3 per 100,000 full-time equivalent (FTE) workers, and the rate for workers age 55 to 64 was 4.6 per 100,000 FTE workers.[4] Both rates were higher than the rate for all workers (3.5 per 100,000 FTE workers).

Using CFOI data for 1992–2017, this article provides an overview of the fatal occupational injuries incurred by older workers in the United States. In addition, it contrasts the fatal injury experience and latency periods (of injury and death) of older workers with those of workers age 54 and under (hereafter referred to as younger

workers). The article also highlights an occupation with a high number of fatal workplace injuries to older workers—farmers. In 2017, older workers accounted for 80 percent of workplace fatalities in this occupation.

Overview

From 1992 to 2017, 38,200 older workers died because of a workplace injury. This figure represents 26 percent of the total number of fatal occupational injuries incurred by all workers during that time. Over the period, workers age 55 and older accounted for 17 percent of all employed workers.

The number of fatal occupational injuries to older workers ranges from a minimum of 1,234 in 1992 (the first year in which CFOI data were published for the entire United States) to a maximum of 1,930 in 2017. (See table 1.) While the number of fatal injuries to workers age 54 and under declined during this time, the corresponding number for older workers increased. (See figure 1.) In recent years, fatal occupational injuries among older workers have accounted for an increasingly large percentage of all fatal occupational injuries. In 1992, 20 percent of fatal occupational injuries were incurred by older workers, and by 2017, that figure had risen to 37 percent. At the same time, workers age 55 and over represented 12 percent of all workers in 1992 and 23 percent in 2017.

Table 1. Fatal occupational injuries, by age, 1992–2017

Year	Age					Percent of total for workers age 55 and over
	All ages	55 to 64	65 and over	55 and over	54 and under	
1992	6,217	767	467	1,234	4,983	20
1993	6,331	811	522	1,333	4,998	21
1994	6,632	866	525	1,391	5,241	21
1995	6,275	827	515	1,342	4,933	21
1996	6,202	855	504	1,359	4,843	22
1997	6,238	875	520	1,395	4,843	22
1998	6,055	836	541	1,377	4,678	23
1999	6,054	816	565	1,381	4,673	23
2000	5,920	831	488	1,319	4,601	22
2001	5,915	775	530	1,305	4,610	22
2002	5,534	784	495	1,279	4,255	23
2003	5,575	802	523	1,325	4,250	24
2004	5,764	907	569	1,476	4,288	26
2005	5,734	933	578	1,511	4,223	26
2006	5,840	963	599	1,562	4,278	27
2007	5,657	934	574	1,508	4,149	27
2008	5,214	920	580	1,500	3,714	29
2009	4,551	853	551	1,404	3,147	31
2010	4,690	948	582	1,530	3,160	33
2011	4,693	936	569	1,505	3,188	32
2012	4,628	936	588	1,524	3,104	33
2013	4,585	933	557	1,490	3,095	32
2014	4,821	1,007	684	1,691	3,130	35

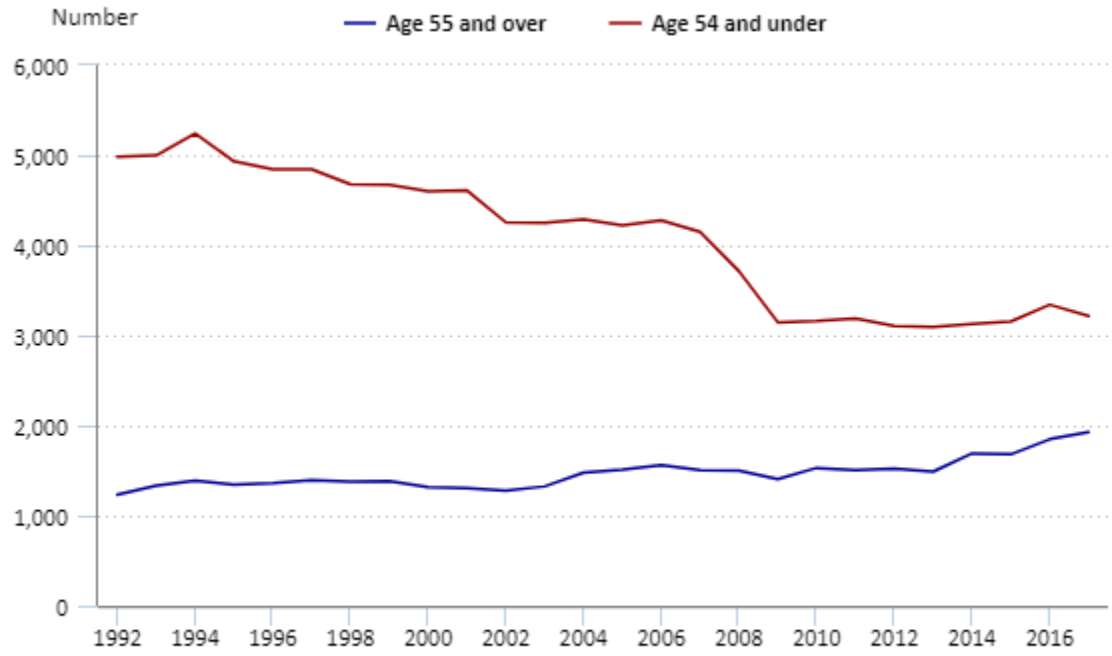
See footnotes at end of table.

Table 1. Fatal occupational injuries, by age, 1992–2017

Year	Age					Percent of total for workers age 55 and over
	All ages	55 to 64	65 and over	55 and over	54 and under	
2015	4,836	1,031	650	1,681	3,155	35
2016	5,190	1,160	688	1,848	3,342	36
2017	5,147	1,155	775	1,930	3,217	37

Source: U.S. Bureau of Labor Statistics.

Figure 1. Fatal occupational injuries, by age, 1992–2017



Click legend items to change data display. Hover over chart to view data.
Source: U.S. Bureau of Labor Statistics.

Among older workers who died from a workplace injury in 1992–2017, about one-third (13,556) were between the ages of 55 and 59 and 0.4 percent (135) were age 90 and over. (See table 2.)

Table 2. Distribution of fatal occupational injuries among older workers, by age, 1992–2017

Age	Fatal injuries (number)	Percent of total
55 and over	38,200	100.0
55 to 59	13,556	35.5
60 to 64	9,905	25.9
65 to 69	6,110	16.0

See footnotes at end of table.

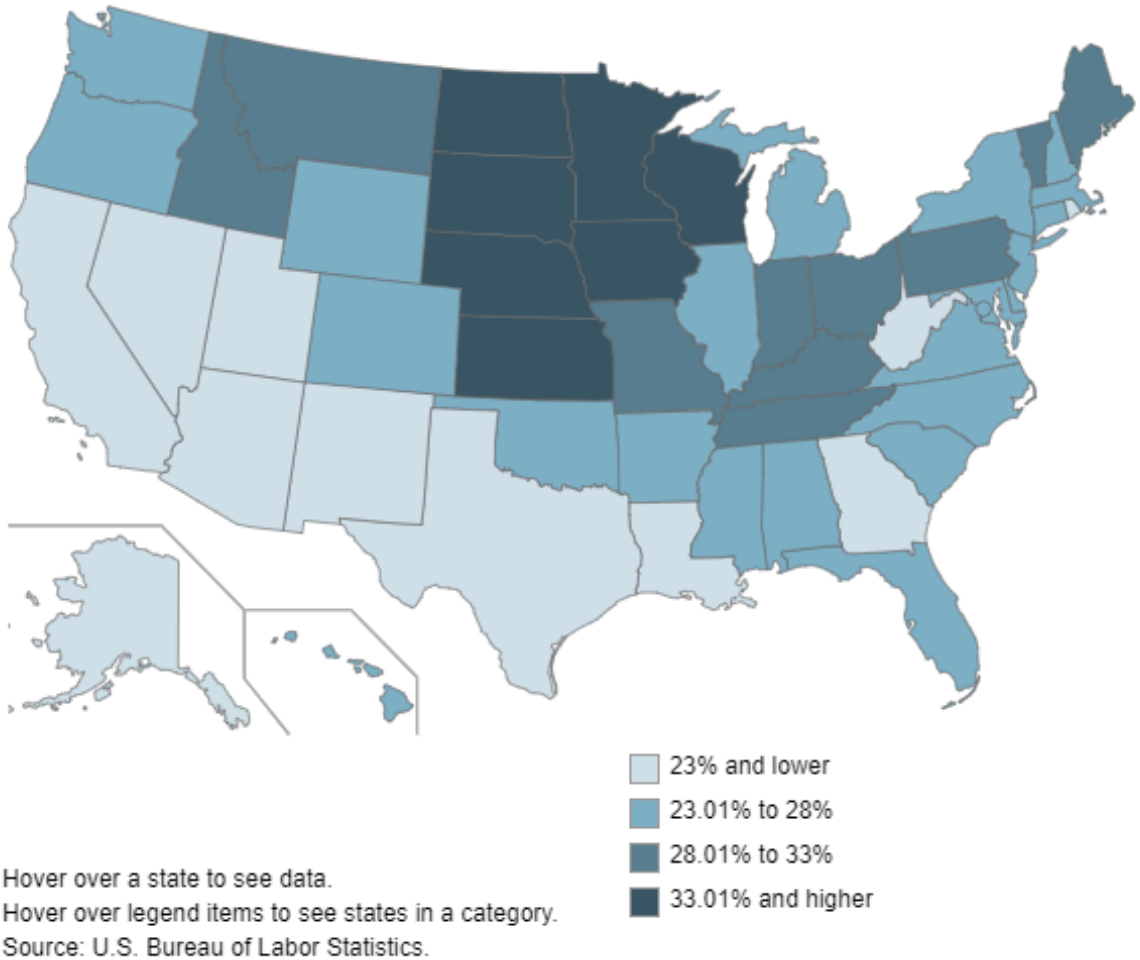
Table 2. Distribution of fatal occupational injuries among older workers, by age, 1992–2017

Age	Fatal injuries (number)	Percent of total
70 to 74	4,024	10.5
75 to 79	2,631	6.9
80 to 89	1,839	4.8
90 and over	135	0.4

Source: U.S. Bureau of Labor Statistics.

The states with the highest shares of fatal occupational injuries to older workers in 1992–2017 were Nebraska (39 percent), Iowa (39 percent), North Dakota (37 percent), South Dakota (37 percent), and Wisconsin (35 percent). While Texas and California had the largest numbers of fatal occupational injuries to older workers over the period, their shares were lower (22 and 23 percent, respectively) than the national average (26 percent). (See figure 2.)

Figure 2. Share of fatal occupational injuries incurred by workers age 55 and over, by state, 1992–2017



During the 1992–2017 period, older workers were more likely to incur a fatal workplace injury than workers in general. In calculating fatal injury rates, the CFOI program has used two different methods: an employment-based method from 1992 to 2007 and an hours-based method from 2006 to 2017.[5] The hours-based fatal injury rates of workers age 65 and over were 14.9 per 100,000 FTE workers in 2006 and 10.3 per 100,000 FTE workers in 2017. The rates for workers age 55 to 64 were 5.2 per 100,000 FTE workers in 2006 and 4.6 per 100,000 FTE workers in 2017. Hours-based rates tend to be higher for older workers because these workers generally work fewer hours.[6] In 2007, the last year for which both employment- and hours-based rates are available, workers age 65 and over had an employment-based rate of 10.2 per 100,000 employed workers and an hours-based rate of 13.5 per 100,000 FTE workers. (See table 3 for full details on fatal injury rates by age group.)

Table 3. Fatal occupational injury rates per 100,000 full-time equivalent workers, by age, 2006–17

Year	All ages	Age 18 to 19	Age 20 to 24	Age 25 to 34	Age 35 to 44	Age 45 to 54	Age 55 to 64	Age 65 and over
2006	4.2	4.0	3.1	3.3	3.7	4.2	5.2	14.9
2007	4.0	3.5	3.4	3.1	3.4	4.1	4.9	13.5
2008	3.7	2.4	2.8	2.8	3.3	3.8	4.7	12.7
2009	3.5	2.5	2.4	2.4	3.0	3.6	4.3	12.1
2010	3.6	2.8	2.2	2.7	2.9	3.6	4.7	11.9
2011	3.5	3.0	2.5	2.4	2.9	3.8	4.4	11.0
2012	3.4	2.9	2.4	2.4	2.7	3.5	4.2	10.3
2013	3.3	2.6	2.2	2.5	2.8	3.4	4.1	9.2
2014	3.4	2.0	2.3	2.4	2.8	3.6	4.3	10.7
2015	3.4	2.1	2.7	2.3	2.7	3.5	4.3	9.4
2016	3.6	1.9	2.4	2.5	3.1	3.5	4.7	9.6
2017	3.5	2.6	2.2	2.5	2.9	3.3	4.6	10.3

Sources: U.S. Bureau of Labor Statistics and U.S. Census Bureau.

Comparing older and younger workers

The fatal injury experience of older workers exhibits some unique characteristics that set it apart from that of younger workers. These characteristics may be due to, among other things, older workers' different employment patterns, different job tasks, and higher likelihood of incurring an injury resulting in a fatality.

One way to identify areas in which the fatality experiences of two groups differ is to use the propensity ratio measure devised by Reginald Harris.[7] This ratio measures the prevalence of a particular aspect of an experience in two different groups, regardless of the size of the groups. For example, consider a case in which homicides accounted for 40 percent of the fatalities in group A and 20 percent of the fatalities in group B. The propensity ratio for homicides for group A would be 2.0, meaning that the share of fatalities attributable to homicides for group A is twice (100 percent) as large as that for group B.[8] A propensity ratio of 1.0 indicates that a particular aspect of an experience has the same prevalence in both groups. In the following analysis, the propensity ratio is used to compare the fatality experiences of older and younger workers.

Table 4 presents propensity ratios, along with fatality counts, by employment status, gender, and race or ethnicity. The data for self-employment clearly stand out. In 1992–2017, self-employed older workers accounted for 35 percent (13,400) of the 38,200 total fatal injuries incurred by older workers. Over the same period, self-employed younger workers accounted for 15 percent (15,977) of the 106,098 total fatal injuries incurred by younger workers. Therefore, the propensity ratio for self-employment for older workers is 2.3 (35 percent divided by 15 percent), meaning that the share of older worker fatalities attributable to self-employed workers was 2.3 times larger than the corresponding share for younger workers. (See table 4.)

Table 4. Fatal occupational injuries and propensity ratios, by age, employee status, gender, and race or ethnicity, 1992–2017

Characteristic	Fatal injuries to workers age 54 and under		Fatal injuries to workers age 55 and over		Propensity ratio for workers age 55 and over
	Number	Percent of total	Number	Percent of total	
Total fatal injuries	106,098	100	38,200	100	1.0
Employee status					
Wage and salary workers	90,118	85	24,800	65	0.8
Self-employed	15,977	15	13,400	35	2.3
Gender					
Women	8,472	8	2,579	7	0.8
Men	97,626	92	35,620	93	1.0
Race or ethnicity					
White, non-Hispanic	71,777	68	30,822	81	1.2
Black or African American, non-Hispanic	11,347	11	3,070	8	0.8
Hispanic or Latino	17,372	16	2,895	8	0.5
Asian, non-Hispanic	3,094	3	919	2	0.8

Source: U.S. Bureau of Labor Statistics.

In 2003–17, two occupations—farmers and heavy and tractor-trailer truck drivers—had the largest number of fatal occupational injuries to older workers (3,217 and 3,772, respectively).[9] However, while heavy and tractor-trailer truck drivers accounted for similar percentages of fatal injuries to older and younger workers (16 percent for older workers and 14 percent for younger workers), farmers accounted for a much higher percentage of fatalities among older workers than among younger workers (14 percent for older workers and 2 percent for younger workers). Thus, the propensity ratio for farmers is 6.3, the highest among occupations or occupational groups with 500 or more workplace fatalities from 2003 to 2017. (See table 5.)

Table 5. Fatal occupational injuries and propensity ratios, by age and occupation, 2003–17

Occupation	SOC code	Age			Propensity ratio for workers age 55 and over
		All ages	Age 54 and under	Age 55 and over	
Agricultural managers (farmers)	11-9010	4,381	1,164	3,217	6.3
Construction managers	11-9021	577	345	232	1.5
Firefighters	33-2011	510	431	79	0.4
Police and sheriff's patrol officers	33-3051	1,671	1,518	153	0.2
Security guards	33-9032	924	642	282	1.0
First-line supervisors of landscaping, lawn service, and groundskeeping workers	37-1012	520	373	147	0.9
Janitors and cleaners, except maids and housekeeping cleaners	37-2011	661	432	229	1.2
Landscaping and groundskeeping workers	37-3011	1,426	998	428	1.0
Tree trimmers and pruners	37-3013	1,014	829	185	0.5
First-line supervisors of retail sales workers	41-1011	1,585	969	616	1.4
Cashiers	41-2011	690	559	131	0.5
Retail salespersons	41-2031	551	377	174	1.1
Farmworkers and laborers, crop, nursery, and greenhouse	45-2092	1,226	937	289	0.7
Farmworkers, farm, ranch, and aquacultural animals	45-2093	752	542	210	0.9
Fishers and related fishing workers	45-3011	584	470	114	0.6
Fallers	45-4021	788	526	262	1.1
First-line supervisors of construction trades and extraction workers	47-1011	1,779	1,148	631	1.3
Carpenters	47-2031	1,290	962	328	0.8
Construction laborers	47-2061	3,892	3,286	606	0.4
Operating engineers and other construction equipment operators	47-2073	739	513	226	1.0
Electricians	47-2111	1,207	930	277	0.7
Painters, construction and maintenance	47-2141	644	483	161	0.8
Pipelayers, plumbers, pipefitters, and steamfitters	47-2150	563	446	117	0.6
Roofers	47-2181	1,104	928	176	0.4
Automotive service technicians and mechanics	49-3023	658	497	161	0.7
Industrial machinery installation, repair, and maintenance workers	49-9040	1,039	727	312	1.0
Line installers and repairers	49-9050	669	565	104	0.4
Maintenance and repair workers, general	49-9071	504	310	194	1.4
Welders, cutters, solderers, and brazers	51-4121	679	524	155	0.7
Miscellaneous production workers	51-9190	521	423	98	0.5
Commercial pilots	53-2012	1,040	616	424	1.6
Driver/sales workers	53-3031	778	568	210	0.8
Heavy and tractor-trailer truck drivers	53-3032	11,069	7,297	3,772	1.2
Light truck or delivery services drivers	53-3033	1,147	763	384	1.1
Taxi drivers and chauffeurs	53-3041	910	582	328	1.3
Industrial truck and tractor operators	53-7051	538	425	113	0.6
Laborers and freight, stock, and material movers, hand	53-7062	1,608	1,258	350	0.6

Source: U.S. Bureau of Labor Statistics.

The large propensity ratio for farmers is also seen in the events resulting in fatalities among older workers. For the events that precipitated fatal work injuries from 2011 to 2017 (all of which had at least 800 fatalities), the

largest propensity ratio was for nonroadway transportation cases (1.9), with the subcategory of nonroadway noncollision incident cases standing out with a ratio of 2.1.[10] (See table 6.) These latter cases include overturns of tractors and all-terrain vehicles (ATVs) for farmers.

Table 6. Fatal occupational injuries and propensity ratios, by age and event or exposure, 2011–17

Event or exposure	Fatal injuries to workers age 54 and under		Fatal injuries to workers age 55 and over		Propensity ratio for workers age 55 and over
	Number	Percent of total	Number	Percent of total	
Total fatal injuries	22,231	100	11,669	100	1.0
Struck by object or equipment	2,186	10	1,396	12	1.2
Fall to lower level	2,611	12	1,825	16	1.3
Exposure to electricity	891	4	158	1	0.3
Roadway incident involving motorized land vehicle	5,497	25	2,830	24	1.0
Nonroadway incident involving motorized land vehicle	826	4	811	7	1.9
Nonroadway noncollision incident	595	3	651	6	2.1
Jack-knifed or overturned, nonroadway	398	2	437	4	2.1
Pedestrian vehicular incident	1,344	6	821	7	1.2
Homicides	2,383	11	748	6	0.6
Suicides	1,363	6	493	4	0.7

Source: U.S. Bureau of Labor Statistics.

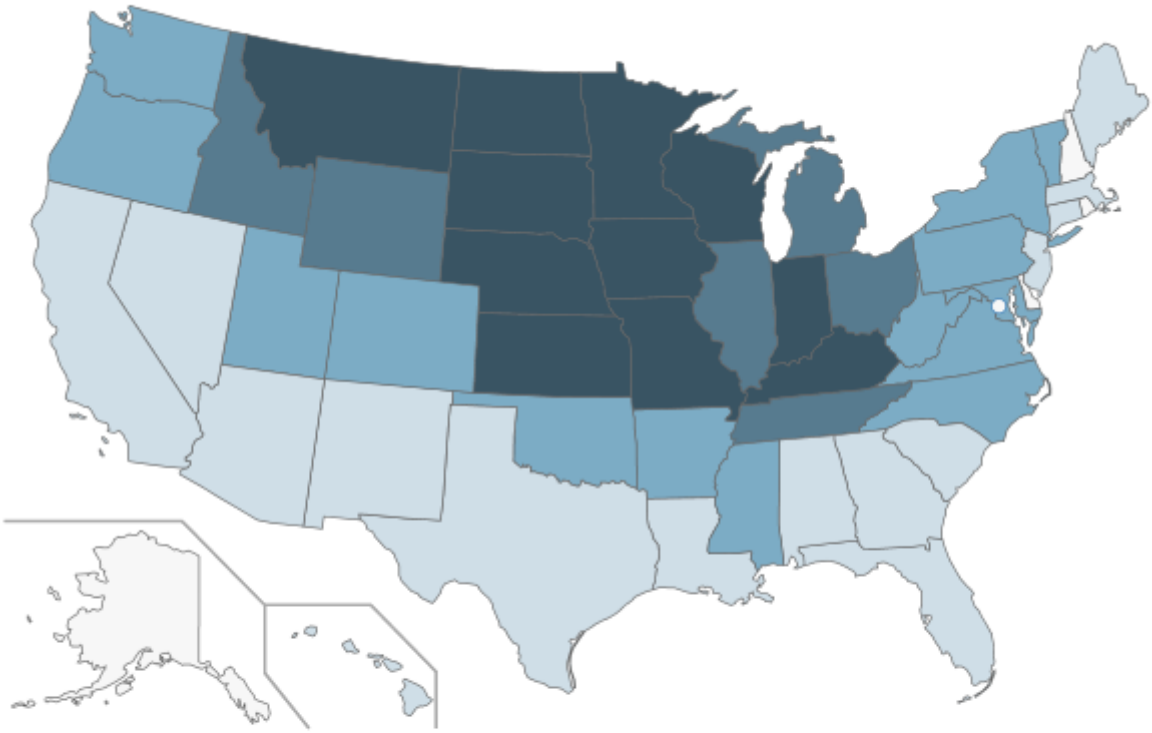
Older farmers—a closer look

In 2003–17, 1 in 7 fatally injured older workers was a farmer. Fatally injured older farmers are remarkably similar demographically, particularly when contrasted with other fatally injured older workers. The following are some of the notable characteristics of the 3,217 older farmers who died of an occupational injury in 2003–17:

- 98 percent were self-employed (compared with 23 percent of other fatally injured older workers)
- 99 percent were born in the United States (compared with 86 percent of other fatally injured older workers)
- 98 percent were non-Hispanic White (compared with 77 percent of other fatally injured older workers)
- 96 percent were men (compared with 92 percent of other fatally injured older workers)
- 61 percent incurred their fatal injuries in the Midwest census region[11] (compared with 23 percent of other fatally injured older workers)

Fatal injuries to older farmers constitute a larger percentage of fatalities among older workers in certain states. States with high propensity ratios for older farmers include Iowa (propensity ratio of 5.0), South Dakota (4.6), North Dakota (4.5), Nebraska (4.3), Kansas (4.1), Missouri (3.6), Montana (3.6), and Minnesota (3.4). (See figure 3.)

Figure 3. Propensity ratios for farmers age 55 and over, by state, 2003–17



In addition to having similar demographics, fatally injured older farmers are alike with respect to certain aspects of the incidents leading to their deaths. From 2003 to 2017, 47 percent (1,502) of the 3,217 fatal injuries to older farmers involved a tractor,[12] and in most of these cases, the decedent was driving the tractor. Another 10 percent (334) of older farmer fatalities involved other agricultural and garden machinery. In 222 cases (7 percent), an older farmer was killed in an incident involving a tree (e.g., being struck by a falling tree). A total of 218 older farmer deaths (7 percent) occurred in incidents involving ATVs, and another 203 deaths (6 percent) involved animals such as cattle and horses. (See table 7.)

Table 7. Fatal occupational injuries and propensity ratios for farmers, by age and source or secondary source of injury, 2003–17

Source or secondary source	Fatal injuries to farmers age 54 and under		Fatal injuries to farmers age 55 and over		Propensity ratio for farmers age 55 and over
	Number	Percent of total	Number	Percent of total	
Total fatal injuries	1,164	100	3,217	100	1.0
Tractors	382	33	1,502	47	1.4
Agricultural and garden machinery	143	12	334	10	0.8
Trees	67	6	222	7	1.2
Animals (e.g., cattle and horses)	73	6	203	6	1.0
ATVs	59	5	218	7	1.3
Pickup trucks	80	7	147	5	0.7

Source: U.S. Bureau of Labor Statistics.

Latency

In a 2013 *Monthly Labor Review* article,[13] William J. Wiatrowski describes a “continuum of [injury] severity” that includes the following categories of injury cases:

- Medical treatment beyond first aid, with no time away from work or restricted activities
- Job transfer or restriction
- Days away from work
- Fatality, which may be further divided into immediate or delayed, often resulting from complications

One aspect of this continuum of severity pertains to whether certain types of cases are more likely to occur among certain groups of workers. Table 8 contains data on fatal occupational injuries to older and younger workers by latency, which is the time between the date of injury and the date of death. The table shows that 93 percent of all older worker fatalities occurred within 30 days of injury, compared with 97 percent for younger workers.

Table 8. Fatal occupational injuries, by latency and age, 1992–2017

Latency	Fatal injuries to workers age 54 and under		Fatal injuries to workers age 55 and over	
	Number	Percent of total	Number	Percent of total
Total fatal injuries	106,098	100.0	38,200	100.0

See footnotes at end of table.

Table 8. Fatal occupational injuries, by latency and age, 1992–2017

Latency	Fatal injuries to workers age 54 and under		Fatal injuries to workers age 55 and over	
	Number	Percent of total	Number	Percent of total
Died on the same day as the incident	89,316	84.2	28,756	75.3
Died 1 day after the incident	5,079	4.8	1,824	4.8
Died 2 to 3 days after the incident	2,648	2.5	1,307	3.4
Died 4 to 7 days after the incident	2,608	2.5	1,298	3.4
Died 8 to 30 days after the incident	3,570	3.4	2,383	6.2
Died 31 to 180 days after the incident	1,270	1.2	1,082	2.8
Died 181 to 365 days after the incident	286	0.3	200	0.5
Died 366 to 1,095 days after the incident	374	0.4	212	0.6
Died 1,096 to 1,825 days after the incident	181	0.2	96	0.3
Died 1,826 or more days after the incident	691	0.7	1,010	2.6

Note: Latency data are not available for all cases.
Source: U.S. Bureau of Labor Statistics.

The age data element in the CFOI is the age of the worker at the time of his or her death. Therefore, in the present analysis, a worker injured at age 25 who dies because of complications from that injury at age 60 would be considered an older worker. However, looking solely at cases in which the worker dies within 30 days of his or her injury minimizes any issues arising from differences in age at the time of injury and the time of death. For cases where the date of injury and the date of death were no more than 30 days apart, younger workers were more likely to die on the day of injury (87 percent, compared with 81 percent for older workers), whereas older workers were more likely to die 1 to 30 days after the injury (19 percent, compared with 13 percent for younger workers).

This discrepancy in latency could stem from older and younger workers incurring different types of injuries, suffering injuries of different severity, or having different susceptibility to dying from complications. While the CFOI does not have an exact measure of severity, certain combinations of injuries suggest that older workers are more susceptible to specific types of injuries and/or complications. For example, of the 146 fatal occupational injuries due to hip fractures from 1992 to 2017 (for which the death was within 30 days of injury), 90 percent (131) were sustained by workers age 55 and over and 10 percent (15) by workers age 54 and under.

Conclusion

Older workers account for an increasingly large share of the workforce and of workplace fatalities. Many of these workers, particularly older farmers, face unique hazards in the workplace. With the help of detailed data from the CFOI, safety and health experts can continue to tailor their efforts to best meet the needs of older workers and to keep them safe during their careers.

SUGGESTED CITATION

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NOTES

1 Data are from the Current Population Survey (CPS) (series ID: LNU02024230, https://data.bls.gov/timeseries/LNU02024230, accessed June 12, 2019). The CPS, administered jointly by the U.S. Bureau of Statistics (BLS) and the U.S. Census Bureau, publishes monthly data on the U.S. workforce, using a stratified sample. The number of employed workers age 55 and over was 14,339,000 in 1992 and 35,299,000 in 2017. Both figures represent annual averages.

2 Data are from the CPS (series IDs: LNU00024230, https://data.bls.gov/timeseries/LNU00024230, and LNU01324230, https://data.bls.gov/timeseries/LNU01324230, accessed January 16, 2019). The civilian noninstitutional population age 55 and over was 50,618,000 in January 1992 and 92,204,000 in December 2017. The labor force participation rate for people age 55 and over was 29.3 percent in January 1992 and 39.7 percent in December 2017. The labor force participation rates are not seasonally adjusted.

3 Data on fatal occupational injuries are from the BLS Census of Fatal Occupational Injuries (CFOI). The CFOI is a federal–state cooperative program that compiles data on all fatal occupational injuries in the United States. To identify and profile fatal occupational injuries, the CFOI uses a diverse set of source documents, such as death certificates, workers' compensation reports, media reports, police reports, and reports from the Occupational Safety and Health Administration. For more information on the CFOI, see https://www.bls.gov/iif/oshcfoi1.htm.

4 A full-time equivalent worker equates to an employee working 2,000 hours annually (40 hours per week, 50 weeks per year).

5 For more information on fatal injury rates from the CFOI, see https://www.bls.gov/iif/oshcfoi1.htm#rates. Employment data are from the CPS and, for certain years, from the U.S. Department of Defense (https://www.bls.gov/iif/oshnotice10.htm). Employment data from the U.S. Department of Defense were used to calculate employment-based national fatal injury rates from 1992 to 2007. For 2006 and 2007, the CFOI produced both employment- and hours-based rates. Because of methodological differences between the two systems, the rates based on them are generally not comparable. However, it was determined that the rates for older workers were sufficiently similar to allow for a comparison in this article.

6 See table 22, "Persons at work in nonagricultural industries by age, sex, race, Hispanic or Latino ethnicity, marital status, and usual full- or part-time status," *Labor Force Statistics from the Current Population Survey* (U.S. Bureau of Labor Statistics), https://www.bls.gov/cps/aa2017/cpsaat22.htm.

7 For more information on propensity ratios, see Reginald Harris, "Suicide in the workplace," *Monthly Labor Review*, December 2016, https://doi.org/10.21916/mlr.2016.54.

8 Conversely, the propensity ratio for homicides in group B would be 0.5.

9 From 2003 to 2017, the CFOI used the Standard Occupational Classification (SOC) system to define occupations. Before that, it used the U.S. Census Bureau's occupational classification system. Because the two systems use different definitions, direct comparisons between them are not possible. The SOC uses six-digit codes to characterize occupations. The present analysis uses only five- and six-digit codes. Farmers are classified under SOC 11-9011 (farm, ranch, and other agricultural managers) for 2003–10, SOC 11-9012 (farmers and ranchers) for 2003–10, and SOC 11-9013 (farmers, ranchers, and other agricultural managers) for 2011–17. The CFOI used the 2000 SOC system from 2003 to 2010 and the 2010 SOC system from 2011 to 2017.

10 Events are coded on the basis of the Occupational Injury and Illness Classification System (OIICS), version 2.01 (https://www.bls.gov/iif/oshoiics.htm).

11 The Midwest census region includes Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

12 The term “involved” refers to the fatal injury’s primary and/or secondary source (per OIICS), in this case a tractor.

13 William J. Wiatrowski, “Using workplace safety and health data for injury prevention,” *Monthly Labor Review*, October 2013, https://doi.org/10.21916/mlr.2013.34.

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